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4-H CLUB ENTOMOLOGY LEADERS' GUIDE

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NATIONAL 4-H ENTOMOLOGY LEADERS' GUIDE



A NOTE TO LEADERS

This guide has been written to help you help 4-H Club members who are carrying entomology projects. It was prepared at the request of Extension workers and local leaders like yourself all over the country. We hope it will prove helpful and stimulating to you and your 4-H members.

Currently, more than 74,420 boys and girls are enrolled in 4-H Club entomology projects. Many times that number carry out approved entomology practices as a part of other activities. In fact, there is scarcely any project in which insects do not play a part.

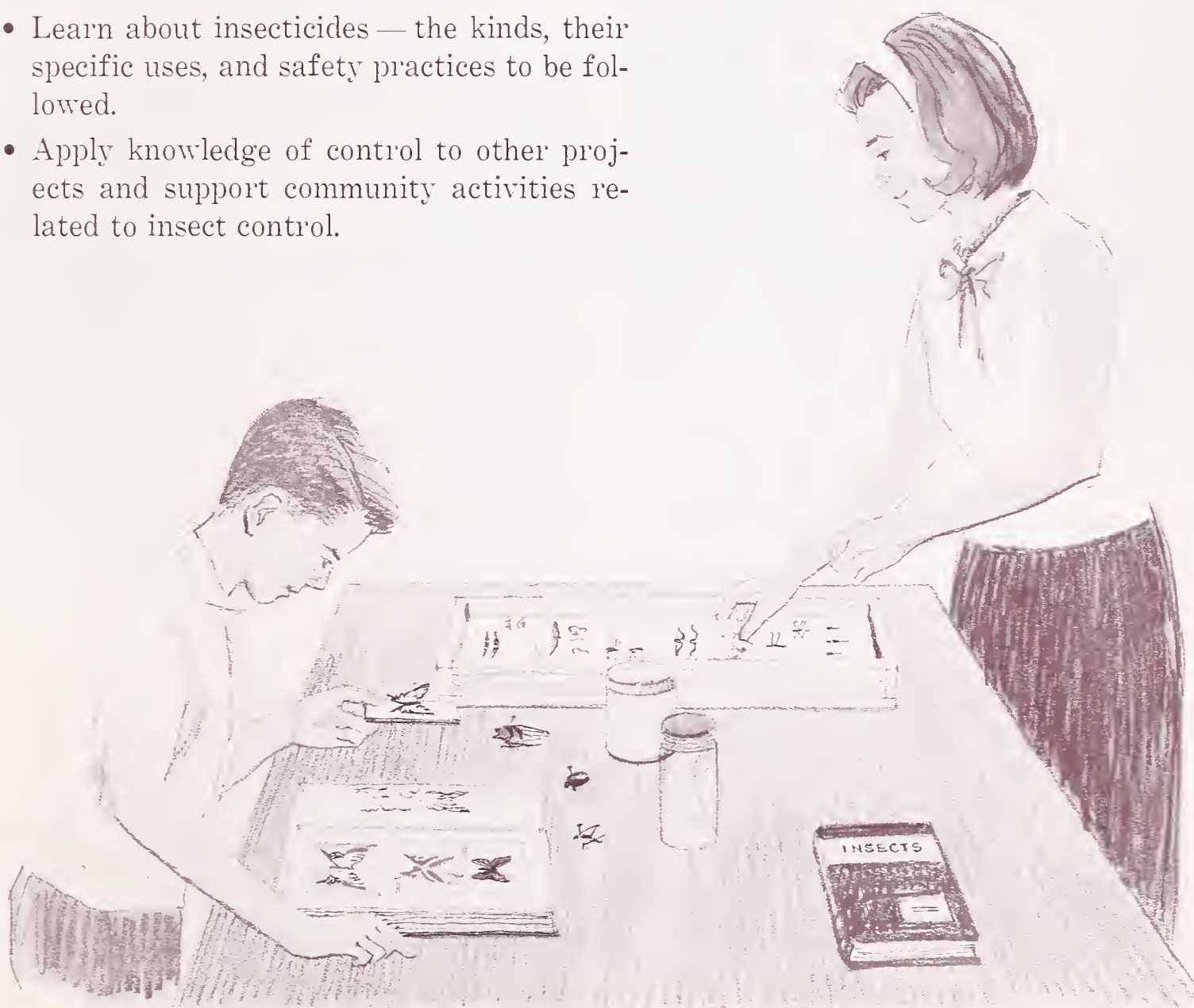
This program is intended to help all 4-H Club boys and girls realize the importance of insects to mankind.

That is a big order—but it can be done with your inspiration and guidance. Your local Extension agents, State specialists, and others stand ready to help you and your 4-H Club members plan interesting, helpful programs adapted to your local situation.

OBJECTIVES

To help 4-H Club boys and girls:

- Develop leadership talents and work toward the broad objectives of character development and effective citizenship.
- Learn the life history and habits of insects and the relation of insects to modern living.
- Learn to recognize the major insect pests and beneficial insects common to the area where they live.
- Apply the fundamentals of insect control by carrying on and evaluating insect control practices.
- Learn about insecticides — the kinds, their specific uses, and safety practices to be followed.
- Apply knowledge of control to other projects and support community activities related to insect control.



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Supersedes Agriculture Handbook No. 106, *4-H Club Entomology Leaders' Manual*.

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4-H CLUB ENTOMOLOGY LEADERS' GUIDE

YOUR OPPORTUNITIES

Local leaders have done an excellent job of encouraging 4-H Club members to learn about insects. Club members know the fascination of studying this important group in the animal kingdom. The great variety of insects and their different life habits afford endless opportunities for exploration.

Collecting, preserving, mounting, and assembling insects in collection boxes appeals to both children and adults. They will be amazed to know there may be as many as a million kinds of insects living under a wide range of conditions—hot and cold, wet and dry, light and dark. You will arouse curiosity when you point out the rows of spots on a large caterpillar or grasshopper. These indicate the openings to the breathing pores. Breathing pores (spiracles) serve the same purpose as your nose. Club members are surprised that some insects, like grasshoppers and caterpillars, chew their food with specially developed mouth parts, and that some, like mosquitos and stinkbugs, suck their food through needlelike mouth parts. By careful observation you can locate and point out how insects feed upon other insects. This will give you a chance to tell how some insects are beneficial and how others are harmful. You can teach 4-H Club members how to control the harmful ones and protect the useful ones.

You can help club members make and display collections and mounts of insects showing life stages and damage. You can also help them work up material for demonstrations and research projects. Entomology club members should be encouraged to select an insect and study it. At a later club meeting, call on some of the members to report the interesting things they learned about the insect.

Junior leaders and older club members enjoy helping younger members carry out various activities. Point out some of the many ways they can assist.

You and your members have a rich source of material right in your own homes. Nearly all newspapers, farm and other magazines carry stories about insects. Encyclopedias and science

books include references to insects. You can get bulletins giving information about most of the important insects common to your area from your county Extension office. Color slides and motion pictures are often available.

Don't be disturbed if you cannot name all the insects collected by your club members. Not even a trained entomologist can do this. Club members should continue to collect and learn about many kinds of insects, even though they cannot identify all of them. County agents and State, Federal, and commercial entomologists may be willing to help your club members identify the insects they collect.

If you can recognize and learn the life habits and control of a dozen or more common insects, and teach this information to club members, you have made an important contribution. An entomology project is not intended primarily to develop entomologists. Rather, the project is planned to help develop citizens with a greater appreciation for insects and their importance to man.

WHY STUDY INSECTS?



There are more kinds of insects than all kinds of animals and plants combined. Approximately three-fourths of a million different species of insects are known. Many more species are yet to be described.

We can learn much by turning to nature's fascinating creatures, the insects, which originated many millions of years ago. This age is shown by insects found in fossils and amber.

Insects have been the origin of legends and superstitions down through the ages. Idols were built in the likeness of the sacred (scarab) beetle worshiped by the ancient Egyptians. In Biblical times crop destruction by hordes of locusts (grasshoppers) resulted in famines. Insects,

such as the deathwatch beetle, were given common names in keeping with the superstition they created in the minds of the people.

Insects are man's greatest competitor for domination of the earth. All crops and livestock and the products derived from them may be damaged by insects. The annual loss from insects amounts to several billion dollars in the United States alone. It is hard to understand how much damage and monetary loss insects cause worldwide. Insects kill our animals, destroy our crops and stored products, crumble our buildings, and actually feed on man himself.

These great losses do not count the discomfort and suffering insects cause by direct attacks on people. Nor do these losses include the cost of medical care and labor time lost due to diseases spread by insects. Certain diseases transmitted by insects have caused more human deaths than all the wars since the dawn of history. Many insect species also transmit important diseases of plants and livestock.

It would be unfair, however, to think of all insects as pests. Most kinds are of no particular importance. Many are useful to man. Ladybeetles, ground beetles, wasps, and certain flies are beneficial because they destroy harmful insects. Honeybees provide us with honey and beeswax. They and other insects are important natural agents of cross-pollination of many kinds of food plants. Some insects are valuable soil builders because they hasten decay of woody plants, improve soil aeration, and improve tilth. Secretions of several species of insects are used in manufacturing drugs, dyes, and paints. Insects provide food for birds, fish, and other forms of animal life. In some countries, insects are used as food for man.

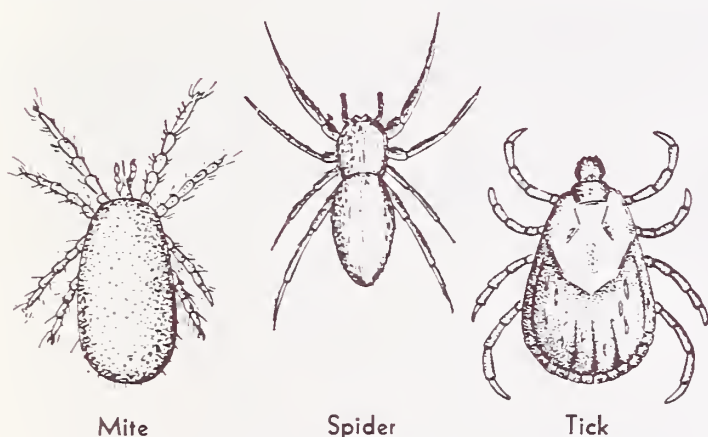
While the economic aspect is important, it should not be the only basis for our study of insects. They also have esthetic value. Many people go through life knowing little about the wonders and beauties of nature and finding little enjoyment in them. We realize a fuller life as we learn more about our natural surroundings.

Insects have inspired designers of airplanes, locomotives, automobiles, children's toys, costume jewelry, wallpaper, draperies, lamp shades, and innumerable other items. Learning about insects and being able to share this knowledge with others is a source of satisfaction and enjoyment.

WHAT IS AN INSECT?



SOME RELATIVES OF INSECTS



Mite

Spider

Tick

All in class Arachnida



Millipedes

Crustacea

Centipedes

Three different classes

Everyone knows there are many kinds of animals. As a leader of an entomology club, you will want to know just where insects fit into this teeming mass of life. Animals, like many other things, are classified simply by dividing them first into large groups having similar characteristics. Then we subdivide each group into smaller and smaller groups until there are no longer any differences in structure upon which further divisions can be made.

Insects are members of the largest group (arthropods) in the animal kingdom. The arthropods include not only insects, but also spiders, mites, ticks, scorpions, daddy-long-legs, centipedes, millipedes, sowbugs, crabs, crayfish, and lobsters. All these animals are grouped together because they have outside skeletons, segmental bodies, and jointed appendages.

The arthropods are divided into many classes. Insects are one of them. Adult insects differ from all other arthropods by having three body regions (head, thorax, and abdomen), six legs, and usually four wings.

On this page are some arthropods that may be mistaken for insects. They belong to other classes and are insects' closest relatives. Mites, spiders, and ticks all have two body regions and eight legs; centipedes have two legs on each body segment; millipedes have four legs on each body segment; and crustaceans have a total of 10 to 14 legs.

Most people refer to insects by a common name. The common name may apply to species like the housefly, or to a group of insects, such as grasshoppers. Even though common names are very important, they vary widely from one place to another.

Insects live all over the world. As new species are discovered, they are identified by insect taxonomists and given a scientific name. Being able to correctly identify insect species is an important role of the entomologist.

SOME GUIDES FOR YOU



YOUR PLACE IN THE 4-H CLUB ENTOMOLOGY PROGRAM

You are a 4-H Club local volunteer leader. There are few undertakings more challenging. Whether your members are taking entomology along with other projects or specializing in this area alone, the horizons are unlimited. As is true with all 4-H Club work, this program is under the general direction of your county Extension agents. Therefore, your local 4-H Club program should be in keeping with the general policies and procedures guiding the county Extension program.

Whether you are the only leader in your club or one of several, you are a key person. The success or failure of your entomology program depends a lot on your interest and initiative, but the whole load should not rest on your shoulders. Your job is to help your club members plan and carry out a program based on their needs, interests, and abilities. That is a big job. The best leaders are those who continue to study and keep up to date.

BRING OTHER LEADERS AND RESOURCES INTO THE PROGRAM

When we properly "team up" young, inquiring minds and the exciting, varied field of entomology, the growth potential is practically limitless. So, we need more leaders and assistant leaders for our program.

Where can we get them?

a. *Look about your area* for other adults who might serve as leaders. Local beekeepers, teachers, pest control operators, nurserymen, foresters, farm leaders, insecticide dealers, and garden supply dealers are "naturals." Any parent or other adult who is interested in helping young people develop can be a leader.



b. *Older 4-H entomology members or former entomology members* may serve as junior leaders for younger 4-H'ers.

c. *College students in entomology or biology* may be interested and willing to help during the summer months.

Successful expansion of your entomology program consists of seeing opportunities to help youth and providing leadership to show the way.

HELP AVAILABLE

No 4-H Club leader need go his way alone. There are many sources of help in your entomology program. Your local Extension agents can provide you with literature, training aids, and other assistance as needed. They have all the resources of your state land-grant college and the United States Department of Agriculture at their disposal. In addition many friends of 4-H in commercial concerns and other organizations can help through your Extension agents.

You may frequently find trained entomologists living in your community. These include entomologists in local colleges, at branch experiment stations, and with pest control operators, as well as the field representatives of insecticide companies. Magazines, newspapers, radio, and television are also sources of information.

Your greatest asset is your own ingenuity. You are not expected to know it all. Help is available if you seek it.

HOW TO ORGANIZE TO GET THE JOB DONE

The 4-H Club entomology program can be adapted to many types of club organization. Consider the pattern being followed in your county and state. The situation in your community may call for special attention. The following are different ways of doing the job:



a. *A community 4-H Club* is one in which members enroll in a variety of projects. This requires a leader to give project instruction along a number of lines during the year. Therefore, the time devoted to one project in regular meetings may be limited.

However, many such clubs have special leaders for the different projects. For example, a leader working with the members enrolled in entomology may hold special training meetings. Often members of other clubs nearby with a special interest in entomology are involved on a community, district, or even a county basis.

b. *Entomology project 4-H Clubs* are organized much the same as the community club except that all members are enrolled in the entomology project.

c. *Areawide and countywide project groups.* Members interested in entomology meet in a central location. Regular meetings can be held with programs built around a specific subject. The number of meetings held during the year will vary from place to place.

There are other ways of organizing your entomology program for greater effectiveness. Some examples include:

a. *Programs designed for different age groups* let you gear the program and teaching methods to the special interests of each group. (See pages 6-7 for suggestions.)

b. *The entomology project fits in with and supplements other 4-H Club projects and activities.* The construction of insect collecting equipment and display boxes can be used toward the requirements of handicraft, wood-working, or other projects. 4-H members enrolled in the garden project need to know how to identify the common garden insects and control them.

Members who have projects in dairying and livestock know the importance of controlling flies, lice, cattle grubs, and other insects that attack farm animals. Many insects also need to be controlled to produce forage and grain crops to feed these animals.

The insects we find in and around our homes are of particular importance. Many, such as termites, attack the foundations of our homes. Others chew holes in our clothing, carpets, and furniture. Insects get into our stored food and make it worthless. The housefly and the mosquito not only disturb our rest and relaxation, but carry disease.

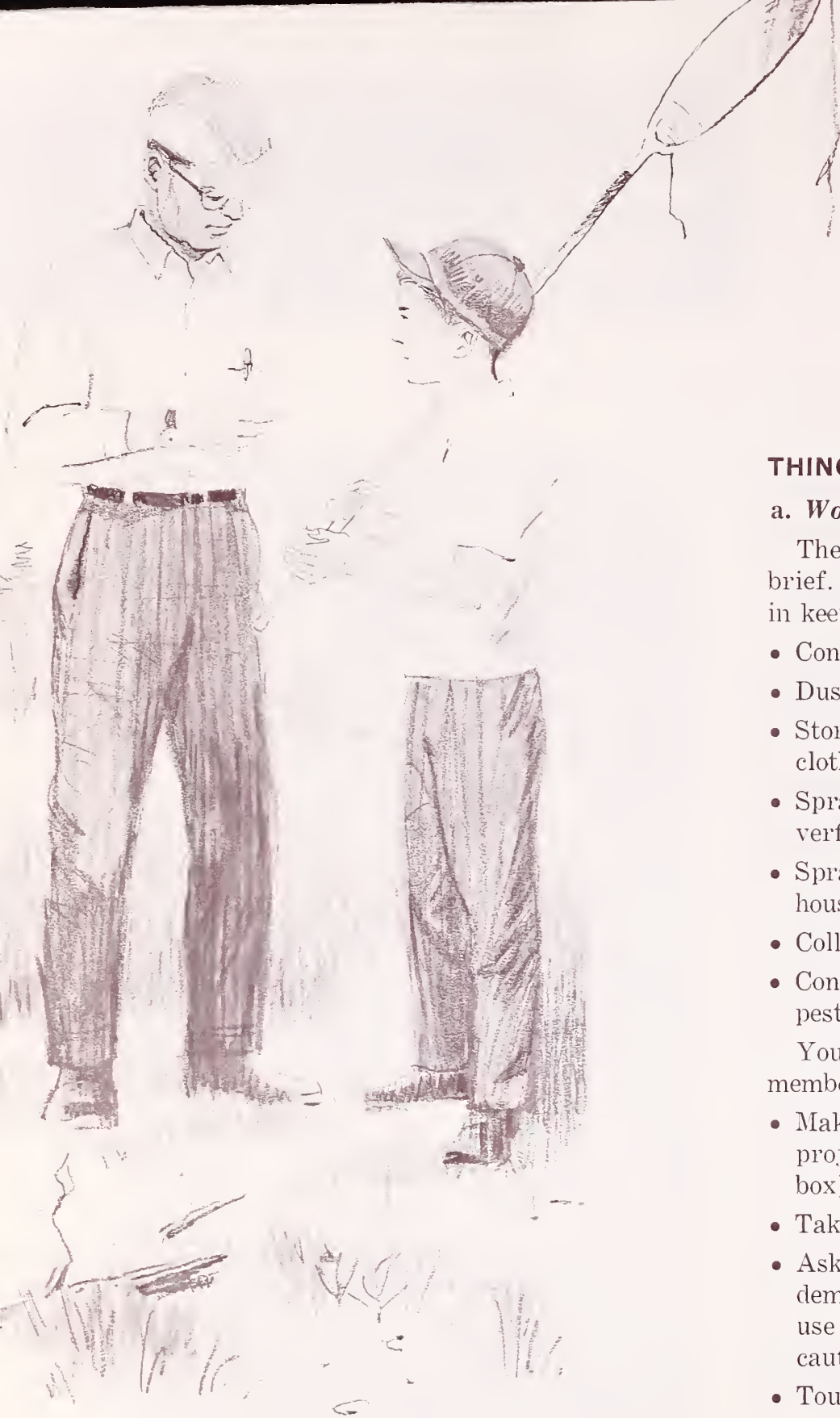
Flowers, lawns, ornamental plants, and pets are attacked by many insects and related pests. Members enrolled in home grounds improvement projects need to know how to control these pests by sanitation, removing breeding areas, or using biological controls and insecticides.

THE YOUTH YOU LEAD

The first objective of our entomology program is to help boys and girls develop into effective citizens by learning responsibility as well as facts.

As a 4-H leader, you'll want to understand boys and girls better. Why do they behave as they do, and why is one so different in behavior from another? Boys and girls themselves do not usually understand the physical and mental changes going on within them. Even as adults, we seldom know why we "tick" the way we do.

Research suggests some general principles that help us understand youth better. Everyone goes through the same stages of growing up, but not always at the same rate. As you observe the growth and development of 4-H Club boys and girls, keep in mind that your program should grow with them.



THINGS TO DO

a. *Working with young 4-H'ers*

The interest span of younger members is brief. Try to help them select short-term projects in keeping with their interests.

- Control an insect on one vegetable crop.
- Dust poultry for lice.
- Store family blankets properly to prevent clothes moth damage.
- Spray or dust to control cockroaches, ants, silverfish, flies, or external parasites on pets.
- Spray shrubs and lawns around home and house plants in the house for control of pests.
- Collect and mount 10 insects.
- Construct a cabinet to safely store drugs and pesticides.

You can plan many club activities in which all members may take part. Some examples:

- Make simple equipment for use in entomology project—collecting net, collecting box (cigar box), insect killing jar.
- Take field trips to observe and collect insects.
- Ask each member to give a simple method demonstration on some phase of entomology—use of aerosol sprayers and bombs, safety precautions in spraying and dusting.
- Tour members' homes to view each other's projects.
- Help with community fly or other insect control programs.

Remember that these youngsters are still in the "play stage." Encourage them to make a game out of learning. Members may:

- Answer rollcall by naming an insect.
- See who can collect the most insects in a given period of time.

- Have an identification contest of a few common insects.
- Have a contest on answering elementary questions about insects. (*Insect-Tac-Toe*, see Circular 816, Virginia Agricultural Extension Service, Blacksburg, Virginia 24061. Cost 10 cents.)

b. Working with Young Teens

In dealing with older 4-H members, remember their new independence of thought and their desire to express themselves. Ask them to help plan an entomology program that will meet their needs and desires.

Recognize their improved abilities and energies by encouraging them to undertake more difficult projects. Some examples:

- Conduct a life history study of at least one insect: housefly, ladybeetle, cabbage butterfly, or a pantry pest.
- Collect and mount a specified number of insects of economic importance.
- Conduct surveys on the time some important insect first appears each year or how much damage an insect pest causes in a certain area.
- Carry out approved entomology practices in connection with at least one other 4-H project or activity.

Encourage their growing creative ability by suggesting that members:

- Consider color and balance while arranging their insect collections to emphasize the scientific aspect.
- Take part in group projects, such as organizing and conducting fly and mosquito control as part of an overall community health program.
- Exhibit products of the entomology project—collections, mounts of life history, written re-

ports of control and insect rearing projects — at state and local fairs, at 4-H events, and in local store and bank windows.

Encourage club members to develop good judgment. An entomology project gives them an opportunity to choose wisely. They might:

- Determine the population of designated insects by actual count or by “sweeping” with an insect collecting net to determine whether to apply insecticides.
- Conduct a public demonstration on safe use, handling, and storage of pesticides.
- Apply an insecticide properly by adjusting spray nozzle and speed and pressure of sprayer.
- Store, handle and use insecticides safely.

c. Working with Older Teenagers

Older 4-H Club members with special interests in entomology can develop their skills and expand their experiences by conducting research in insect control, life history studies and surveys, and by helping in community health and safety programs. They can give demonstrations and illustrated talks on the safe use of insecticides and many other important entomology subjects.

You will have to be alert to your responsibilities to guide club members in this special interest group into challenging and productive activities. As a result of these experiences, some club members may consider careers in entomology.

In this group, you may have some members who have been in the entomology project for a long time, some who have come from other projects, and some who are completely new to 4-H. You will have to allow for their varying levels of interest and knowledge and, at the same time, remember they are young adults. Projects and activities for this group must offer more responsibility and challenge than for younger members.



TEACHING METHODS AND AIDS

The progress that 4-H members make in entomology depends largely on the teaching methods you use. Here are some of the most commonly used methods and teaching aids.

DEMONSTRATIONS

A demonstration is simply showing and telling someone how to do something. Have you ever shown anyone how to milk a cow, how to set out a plant, how to start an automobile? If you have, then you have given a demonstration. Giving a demonstration helps the club member develop poise, initiative, and originality. It is also the best known technique for sharing what we have learned with others.

- a. *Individual demonstrations* should be a part of every club meeting. Each member should have a chance to show and tell how to do some phase of the subject being studied.
- b. *Team demonstrations* should be used to handle the subjects that are too difficult for an individual. Clubs should repeat their best individual and team demonstrations at achievement banquets, county fairs, parents' night programs, meetings of civic clubs, and other occasions.

Cover only one main theme or idea in a demonstration. Themes you might use are: roach control, ant control, or safe use of insecticides. The opportunity for individual demonstrations is virtually unlimited. The following example may suggest others.

EXAMPLE:

Subject:

Equipment:

Introduction:

Methods and materials to be used:

Summary:

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EXAMPLE:

<i>Subject:</i>	CONTROL CLOTHES MOTHS IN WOOLEN CLOTHES
<i>Equipment:</i>	Woolen suit on hanger, clothesbrush, plastic clothes-bag, insect-tight storage box or drawer, PDB crystals, mothballs, old newspaper, spray.
<i>Introduction:</i>	Clothes moths present in most areas. Damage can be severe. Loss in money, time, etc. Clean and protected clothes not likely to be damaged.
<i>Methods and materials to be used:</i>	How to control clothes moths—sunning, brushing, tight storage, mothballs, PDB crystals, or 5-percent DDT oil spray. Show how to use these.
<i>Summary:</i>	Clothes moths do not like clean woolens, sunlight, or chemicals. Therefore, keep woolens clean, treat with proper materials, and store in insect-tight containers.

DISCUSSIONS

Club discussions are a way to encourage thought on a subject. You might use several types of discussion, depending upon the size of your group, your chances to prepare ahead, and other factors. Some of the most popular are statements and questions relating directly to problems in your community. Put them on the board or on separate sheets of paper. Your list may include some of the following:

- a. Entomology has a bearing on most 4-H Club projects.
- b. Entomology is the study of insects, spiders, and centipedes.
- c. Do rural entomology problems have an effect on city people, and if so, how?
- d. Are livestock in this community bothered by insects?
- e. Is the health of our people affected by insects?
- f. Are there beneficial insects? If so, list them, and tell why.



GAMES

Games add spice to the entomology project. Those used in other activities can often be adapted for this use. Contests are a type of game. The correct answers are given in this sample to guide leaders.

Contest Quiz—Make as Many Marks (X) as Necessary to Answer Question



a. *Cricket*: If you were a cricket singing by the side of the road, you would sing with: your mouth () ; your sides () ; rubbing spurs on legs on wing edge (X).



b. *Chigger*: If you were a chigger (redbug) on your 4-H Club agent, you would make him swell up by: sticking your beak in him (X) ; kicking him () ; stinging him () .



c. *Wood tick*: A tick lays its eggs on: an animal () ; ground (X) ; bush () .



d. *Spider*: Large garden spiders found in cottonfields: eat each other () ; eat cotton bolls () ; eat insects (X).



e. *Mud dauber*: I am a mud dauber. I use my house to: store honey () ; store spiders (X) ; to hide in when it rains () ; rear young (X).



f. *Ant*: If a man can lift 2 times his own weight, an ant can lift 10 times (X) ; 20 times () ; 100 times () ; 200 times () his weight.



g. *Flea*: I am a flea. When I hatched from an egg I was: on Fido () ; in the dirt under the house (X).



h. *Termite*: The termite that does all the damage has eyes like: an eagle () ; an ant () ; a fly () ; no eyes (X).



i. *Dragonfly*: Eats mosquitos (X) ; is a doctor for snakes () ; eats tadpoles () .



j. *Mosquito*: I am a mosquito. I want to give you spring fever and chills. When I bite you, I stand on my head (X) ; lie down () ; sit down () .



k. *June bug*: A June bug (May beetle) takes: 3 months () ; 6 months () ; 1 year (X) ; 3 years (X) ; 6 years () to complete its life cycle.



l. *Tadpole*: I am a tadpole. I turn into: an insect () ; a fish () ; a snake () ; a mud puppy () ; a frog (X).



m. *Honeybee*: I am a honeybee. To produce a pound of honey, I would have to travel a distance equal to: 1/2 time (X) ; 1 1/2 times () ; 3 times () ; 6 times () around the world.

You can also use *playlets* to make the entomology project interesting. Your State project book may include some representative playlets. If you can't find any, write your own on whatever topic your club members are studying.

TOURS AND FIELD TRIPS

Visit 4-H Club projects where successful insect control measures have been followed. Also visit some projects where no control methods have been used to see the contrast between poor and good practices.

Field trips may be taken alone or with others who are not necessarily club members. The club member should go primarily to study some phase of entomology.

Collecting trips may be made to woods, gardens, orchards, fields, ponds, streams, or nearby parks.

Visit areas where there are large infestations of destructive insects. Have the members count the number of insects per square foot, or on each branch, or have them estimate the damage or the potential damage caused by insects.

Organize field contests between members, teams, or clubs. Have the teams collect a number of items, such as one aquatic insect, one gall, one sample of bark beetle damage, one termite, one ant, one fly. The team that collects all the items first and labels them correctly wins.

Have club members prepare a report of the

field trip as soon as possible after the trip is made or before the next meeting.

Visit the local library and have club members look at insect books. There are many. Some libraries have 200 or more.

COLLECTIONS

Collections are a valuable part of the project. They help members get to know the names of insects and provide excellent exhibit material. Collections usually consist of the adult forms of insects. However, the larval forms may be included after being properly preserved in 70 percent alcohol and sealed in vials. Adult forms should be mounted on regular insect pins. Common straight pins are not recommended. Cigar boxes are suitable for beginners, but older club members will prefer larger display boxes with glass tops. A display box with outside dimensions of 24 by 18 inches and 3 inches deep is often used. Your State project book may give detailed recommendations.

EXHIBITS

Exhibits give members a chance to show what they've done and keep the public informed about their work. They may be displayed at fairs, in store windows, in community houses, and in other places.

Models, collections, photographs, and samples of insect-damaged plants and similar items are all excellent aids for successful exhibits.



LIFE HISTORY STUDIES

For this part of the entomology project or activity, select one or several insects common in the community. Observe the changes in the form, structure, and habits of the insects as they pass through their various life stages. Younger members will be fascinated by watching a moth emerge from a cocoon. Older 4-H members, with more experience and training in entomology, might be interested in watching insects lay eggs, watching the eggs hatch into tiny larvae or nymphs, then noting the changes in color and form as the insect grows to the adult stage. Have members take notes on all observations, including the number of days insects spend in the various stages, kind of food, if any, taken in each stage, number of eggs laid by the adult, and where insects spend the winter, and in what stage.

Select insects that can be caged for study and that have short life cycles, so the work can be completed during one season. Examples are houseflies, blowflies, cabbage butterflies, Mexican bean beetles (where they occur), squash bugs (Northern States), and Harlequin bugs (Southern States). Your county Extension agent can suggest other insects suitable for use in life history studies.

INSECT CONTROL STUDIES

This phase of the 4-H Club entomology project includes individual or group activities on the farm, in the home, and in the community. Studies can be conducted on hundreds of different insect projects. Among excellent examples are: spraying or dusting cattle for lice or ticks; treating poultry for lice; spraying or dusting a particular field or garden crop; constructing a flytrap; spraying a barn, garbage rack or poultry house for flies; constructing insect-tight storage boxes to prevent clothes moth damage to woolen blankets or furs; fumigating to kill stored-grain insects; and many more.

Control studies also include complete insect control programs carried out seasonally as a part of other 4-H Club projects, such as vegetable gardening, baby beef production, home beautification, and poultry production.



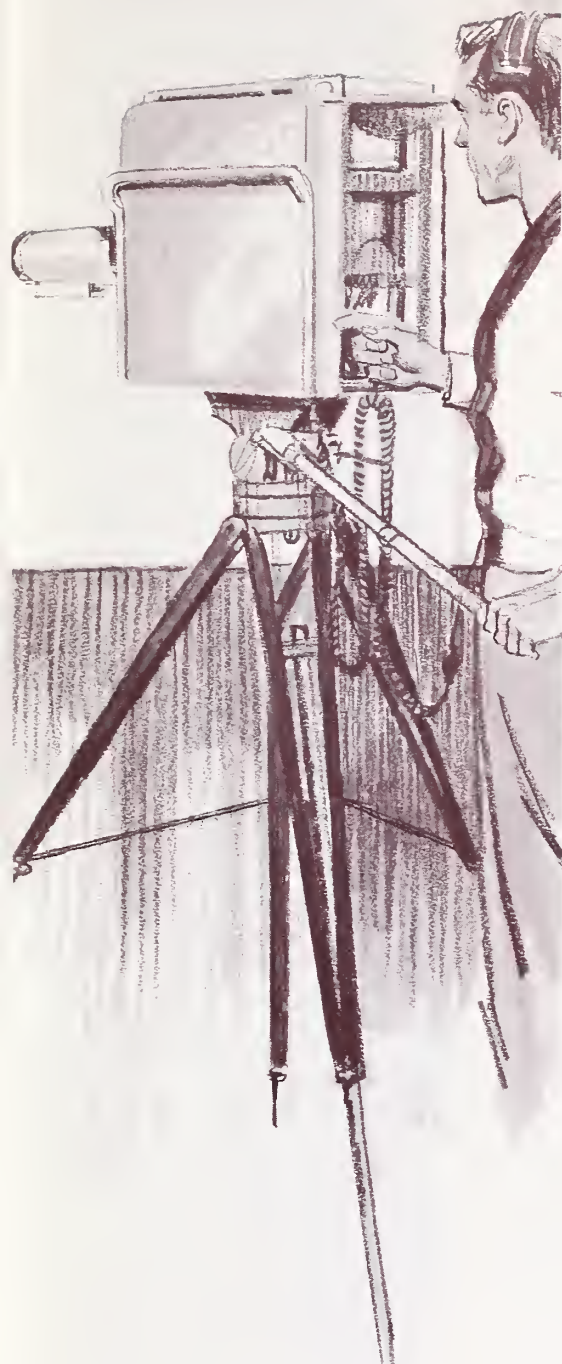
SURVEYS

Surveys serve several functions. They are used to find new species, keep track of insect migration, and time insect control practices.

The method used for the survey will differ from one area to another, depending on the kind of insect involved and the crop. The simplest way is for members to examine some plant to see how many kinds of insects are feeding on it, then record what they find. Make sample counts of the insect on a given number of plants or a specified number of feet in a row crop. The "sweeping method" of surveying is usually made on crops such as alfalfa and peas. Consult your State project outline for definite instructions on making a survey in your area.

FILMS AND SLIDES

Movies on entomology are distributed by your State Extension Service and by several commercial organizations. County Extension workers can help you get appropriate films and slides.



SUBJECT MATTER SUGGESTIONS FOR 4-H CLUB MEETINGS

The following outlines are merely suggested ways to present the entomology project to younger members. Your meeting to organize your club will be before the meetings outlined below. These suggestions do not include the business or recreational phases of the meetings. They are intended to supplement, not conflict with or replace procedures recommended in your State or county.

FIRST MEETING

1. Open the meeting with a discussion of the topic. *Why Study Insects?* (See p. 2 of this guide.)
2. Relate this to the entomology project.
3. Pass out appropriate project materials.
4. Discuss the requirements of the project with the members.
5. Have a brief discussion on how entomology fits in with other projects.
6. Tell members to assemble the materials needed to make an insect killing jar. Have them bring these materials to the next meeting. If possible, have each member bring a live insect to the next meeting.

SECOND MEETING

1. Open the meeting with a demonstration on how to make an insect killing jar.
2. Have members make their own killing jar and kill the insect they brought with them.
3. Discuss, *What Is an Insect?* (See p. 3 of this guide.) Tell how insects differ from other living creatures.
4. Show members the parts of an insect and have them identify these parts on the insect they brought with them.
5. Tell members to bring the materials needed to construct an insect spreading board to the next meeting.
6. Show a film on insects.

THIRD MEETING

1. Open the meeting with an entomology rollcall on damage caused by insects.
2. Demonstrate how to make an insect spreading board. Have the members construct their own spreading boards.
3. Show how to spread the wings of a butterfly. If live butterflies cannot be found at this time of the year, construct a model and use it for demonstration.
4. Show a film on insects.
5. Tell members to bring materials for making an insect net and an insect collection box.

FOURTH MEETING

1. Open the meeting with a short discussion on how insects affect man. (See p. 2 in this guide.)
2. Construct the insect collecting net. Show how to use it. Show how to remove insects from the net.
3. Construct an insect collection box.
4. Discuss, *Where to Look for Insects*. (See p. 11 of this guide.)
5. Tell members to collect 4 or 5 insects and bring them to the next meeting.

FIFTH MEETING

1. Open meeting with a rollcall on where to look for insects.
2. Have members report on their experiences in collecting.
3. Show how to pin the various groups of insects. You may want to repeat the demonstration on how to spread the wings of a butterfly. Pass out the insect pins and have the members pin the insects they collected.
4. Show how to use the insect label and how to adjust the height of the insect and the label on the insect pin.
5. Show how to arrange the insects in the collection box.
6. Discuss how you can get help to identify insects you don't know, (See p. 4 of this guide.)
7. Discuss plans for exhibiting insect collections.
8. Ask members to choose one insect and be prepared to report on its life history at the next meeting.



SIXTH MEETING

1. Open meeting with a rollcall. Member answers by giving name of an insect, preferably one whose life history and control he has studied.
2. Have selected members report on the life history of an insect.
3. Review important points to remember in life history studies.
4. Divide your members into four groups, and assign each group to look up as much information as possible on one of the following four ways insects are protected by nature:
 - a. *Mimicry*—one insect resembles another which is less tasty to its enemies.
 - b. *Pugnacity*—bees protect their hive by stinging their enemies.
 - c. *Playing dead*—certain insects pretend death whenever disturbed.
 - d. *Protective coloration and form*—blending into their surroundings.

This information may be obtained from encyclopedias or magazines or from live specimens.

SEVENTH MEETING

1. Open meeting with a rollcall naming a part of an insect.
2. Have a club member or a team demonstrate control methods for one or more common insects.
3. Discuss the major points in insect control with members.
4. Distribute and note highlights on Opportunities in Professional Entomology. (See selected references in this guide.)





KEEPING RECORDS



Use your State or county record forms and follow instructions.

AWARDS AND INCENTIVES



Local groups and commercial organizations contribute to the entomology project. The following awards are available to individual members.

- | | |
|-----------------|---|
| COUNTY | Gold-filled medals of honor will be awarded to top-ranking members. |
| STATE | An all expense trip to the National 4-H Club Congress to be held in Chicago. |
| NATIONAL | Six \$500 college scholarships will be presented to a "blue award group" of State winners, preferably to consist of 1 from each of the 4 Extension regions and 2 at large. The allotment depends upon the quality of achievement records. |

INFORMING THE PUBLIC



Enlist the assistance and guidance of your county agent to help you gain the support and cooperation of newspapers and radio and television stations. These facilities can be invaluable in helping you gain public support for the entomology program. Keep them informed of meetings and special events such as tours, demonstrations, contests, recognitions, and ceremonies.

Participation in radio and television shows is an excellent way to acquaint people with the many facets of entomology. Your county or home agent may have a regularly scheduled radio or TV program on which you and your club members could appear. Several of your discussion topics will make interesting radio interviews. Invite the radio editor out to some of your meetings to record your discussions.

Listed below are some subjects that would make good news stories or be suitable as topics for public discussions or demonstrations:

- Club or member activities
- Tours and field trips
- Campaigns
- Meetings or demonstrations featuring outside speakers

- Talks on safe and proper use of pesticides at meetings of civic, garden, and other groups
- Winners in the county, State, and National awards program.

Don't overlook television. Use simple demonstrations such as those described on page 8 of this guide.

A newspaperman will appreciate your reporter's giving him the essential facts about any events to be announced. These facts are the familiar five "W's" and "H" of any news story—**when, where, what, who, why, and how**. This means when and where the event is to be held; what it is about; who will take part; why it is being held; and how it will be done.

As complicated as farming is today and with the concern about pesticides, you should not overlook the chance to emphasize all aspects of pest control. You might do this by giving demonstrations or illustrated talks on the safe and proper use of pesticides in controlling a particular pest of the home, home grounds, crops, or animals. Other topics suitable for discussion would be those related to labeling laws, use regulations, proper storage and handling, and sources of information on pesticides.

HOW WELL HAVE YOU DONE?



Your duties at the end of the year are many. There are record books to be completed and forwarded to the county Extension office. You help arrange for members to attend district and State events. You help plan exhibits for fairs and arrange for transportation to these events. This is the time, too, when you evaluate the results of the entomology program. Some measures of your success are:

- The number of members who participated in the program
- The number of members who completed their objectives
- The number of members who plan to enroll next year
- The community's response to the entomology program, and parents' interest in the program

Evaluation is a never-ending process if the program is to grow.

Rewards You Receive—You have given much of your time, thought, and energy to the 4-H program. What are your rewards? Not money, surely. Yet the satisfactions of 4-H leadership are many:

- The fun of service to boys and girls
- Opportunities to meet people and attend events
- Personal growth
- Inner satisfaction
- Service to community, county, and State
- Public recognition.

Leaders testify that they often “take away more than they bring.” They agree with the late Dr. C. B. Smith that their most enduring satisfaction in life is to devote the talents with which they are blessed to others. “That which you do for yourself dies with you; that which you do for others lives long after you are gone.”

Your satisfactions — Perhaps your time of greatest satisfaction is when members you have trained reap the reward of their work. The member's rewards are several:

- He may have helped get new entomology practices used on his home farm.
- He may have influenced neighbors to adopt new practices.
- He may have earned an office in his club.
- He may have received well-merited publicity in press and radio.
- His activities may have been publicly acknowledged in the county achievement programs.
- He may have achieved the crowning glories of trips to the National Conference, the National Club Congress, or the State Roundup.
- He may have won other county, State, or even National honors.

These are the hours when you feel the satisfaction of a teacher whose students have justified his fondest hopes. You know that your hours spent with boys and girls have helped build good citizenship and character.

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CAUTION: In using pesticides, follow directions and heed precautions on pesticide labels. Be particularly careful where there is danger to humans or animals or possibility of contamination of water supplies.

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